UGIC 2008

Local GIS Planning

Parts 1 & 2 from Plenary & Breakout Sessions

Presented by:

Michael Terner
mgt@appgeo.com

What is GIS Strategic Planning?

The process of evaluating GIS needs and determining how best to meet those needs

- **Many names for it:**
  - **GIS Planning**
  - **Requirements analysis**
  - **Needs assessment**
  - **Implementation planning**
  - **Enterprise GIS strategy**

What are the components?

- Business needs and drivers
  - Strengths and weakness assessment
  - Opportunity assessment
- Functional requirements
  - Data requirements
  - Software capabilities
- Application requirements
- Technology strategy and architecting
- Implementation strategy
  - Phasing and timeline
  - Budget & funding

When do you need to do it?

- When you are:
  - Just starting out
  - Trying to take it to the next level
  - Trying to solve a new problem
  - Needing an outside perspective
  - Evaluating technology changes
  - When you are in need of funding

Local Government
GIS Strategic Planning
Part 1 (from Plenary)

- Why?
- What?
- How?
- Who?
- How much?

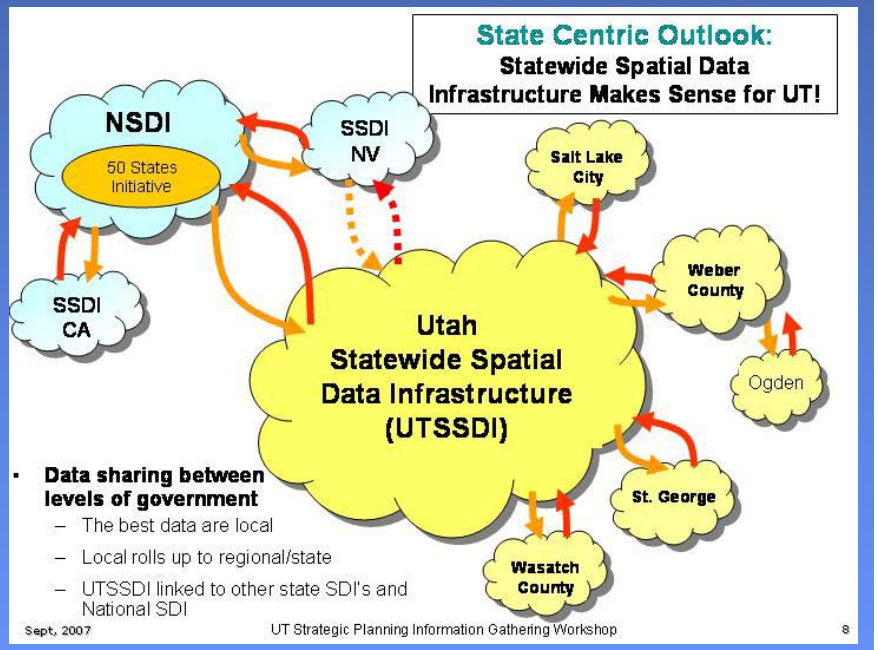
Why do a GIS strategic plan?

- When spending large amounts of money, must demonstrate good planning
  - Set expectations
  - Define success and benefits
- Not all GIS are alike: determine what your city's/county's GIS will look like
  - Ensure planned system meets identified needs
- Develop cost estimates for system implementation
  - One-time, capital costs
  - Ongoing, operational costs
- Develop information to help justify and "sell" the system
- It's not just for "beginners": strategic planning can be valuable for helping a system grow and mature
  - Step outside the box

Understand inter-governmental interaction

And academic, private and NGO interaction as well

- Feds ←→ States
- State ←→ Locals
- Data source interactions
  - NSDI is a composite of state data
  - UGI is a composite of Utah local data
  - Locals use SGID data
  - State uses local data
- Partnership opportunities
  - Public/Private collaboration on road centerlines



What does a GIS Strategic Plan Look Like?

County of XYZ

GIS Needs Assessment & Implementation Plan

Section 1

GIS Needs Assessment

The "wish list"

- Departmental summaries
- Data layer requirements
- Attribute data requirements
- Application requirements

Section 2

GIS Implementation Plan

The "do list"

- System configuration
- Data development plan
- Application development plan
- Staffing and management plan
- Budget & timeline

How do you do a GIS Strategic Plan?

- **It's a planning *process***
  - Be inclusive
  - Provide education along the way
- **Typical workflow:**
  - **Kickoff Meeting**
    - Introduce technology to newcomers
    - Set expectations: for results, levels of participation
  - **Conduct Interviews**
    - Listen to needs
    - Suggest possibilities of the technology
    - Collect materials (maps, forms, data bases, etc.)
  - **Write It Up**
    - Synthesize info that is gathered: devise a strategy
    - Get feedback from participants: make sure it's feasible
  - **Sell The Vision**
    - Try to ensure it actually happens

Think about the benefits of local govt. GIS

- Document these during the planning process
- Quantitative Benefits
  - Increased efficiency
  - Avoided costs
  - Enhanced revenues
- Qualitative Benefits (value added benefits)
  - Better mapping
  - New capabilities (analysis, modeling)
  - Avoid accidents (e.g. water main breaks)
  - Attract economic development

Good information leads to better planning and decision making, and ultimately better quality of life

Who performs the strategic plan?

- Can be done using **in-house** resources
  - Deep knowledge of your organization
  - Less costly
  - But don't underestimate the time required
- Can be done using a **consultant**
  - Outside perspective can be beneficial
    - Knowledge of many organizations
  - Efficiencies from having done it before
  - Keeping up with technology can be a fulltime job
- Can be done as a **hybrid-partnership**
  - Coaching and facilitation; Division of tasks
  - What is being done for the State of Utah Strategic Plan

How much does a strategic plan cost?

- It depends?
  - Size of the organization
    - How many interviews/workshops?
  - Level of detail
    - Full technical architecture vs. software requirements
  - Pre-existing planning material
  - The scope?
    - Requirements only?
    - Implementation only?
    - Costs and benefits?
- There's a range
  - City/Town: $5,000 → $30,000+
  - County: $10,000 → $50,000+
  - State: $40,000 → $150,000+

Conclusion

- GIS technologies have **matured**
- Technology and data continue to be more widespread and **affordable**
- **GIS Planning** is an important component of success
  - Defines the project
  - Helps to sell the concept and educate officials and decision makers

Local Govt. Strategic Planning
Overview
Part 2 (from Breakout Session)

- Review the “Why & What” from plenary
- Examine what local govt. GIS looks like in general
  - What are we planning for?
- Examine an advanced implementation
  - Setting the bar
  - Can we get there w/o planning?
- Answering your questions

Why do a GIS strategic plan?

- When spending large amounts of money, must demonstrate good planning
- Not all GIS are alike: determine what your city's/county's GIS will look like
- Develop cost estimates for system implementation
  - One-time, capital costs
  - Ongoing, operational costs
- Develop information to help justify and "sell" the system
- It's not just for "beginners" strategic planning can be valuable for helping a system grow and mature

What does a GIS Strategic Plan Look Like?

County of XYZ

GIS Needs Assessment & Implementation Plan

Section 1

GIS Needs Assessment

The "wish list"

- Departmental summaries
- Data layer requirements
- Attribute data requirements
- Application requirements

Section 2

GIS Implementation Plan

The "do list"

- System configuration
- Data development plan
- Application development plan
- Staffing and management plan
- Budget & timeline

What does a "typical" local Government GIS look like?

What is likely to be on our "wish list"?

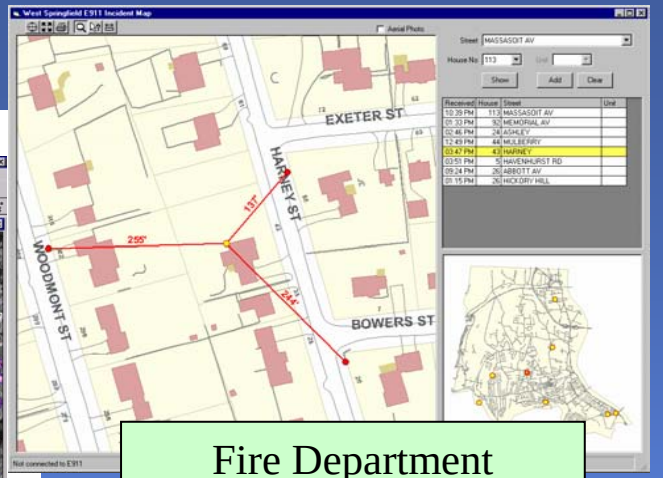
Characteristics of a Local Govt. GIS

- Becoming popular in large and small local governments
  - All counties in Utah doing "something"
  - Increasing numbers of cities
- **Multi-departmental** by nature
  - To maximize chances for success and return on investment:
    - Requires coordination
    - Requires good planning
- **Web-centric** deployments are becoming the norm
  - Maximizes data access
  - Minimizes software costs
- Not easy, nor inexpensive to do correctly
- Beginning with **good data** is key
- **Staffing** must be addressed

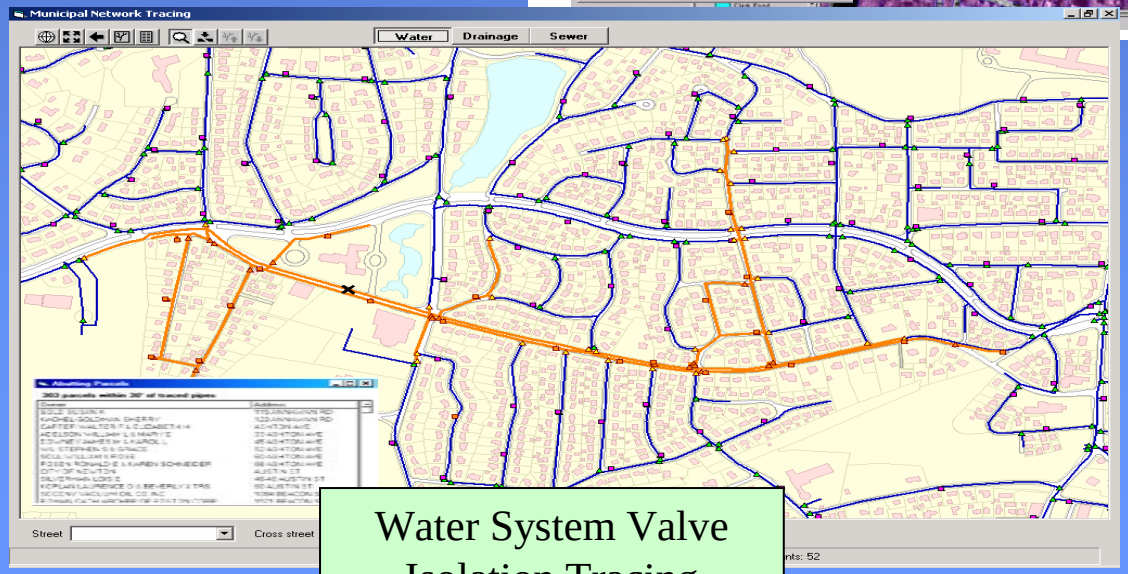
Examples of Local Govt. GIS Applications

Scanned image access & Document archive

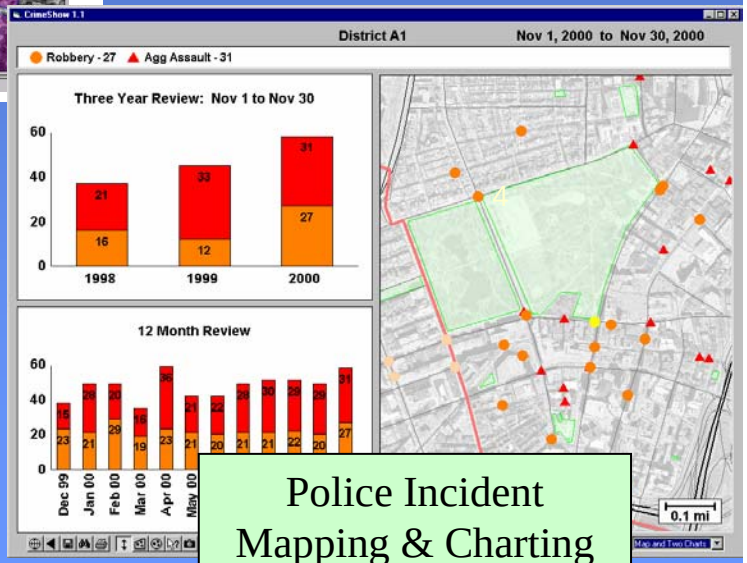
Abutter's List and Mailing Label Production



Fire Department Dispatching Support



Water System Valve Isolation Tracing



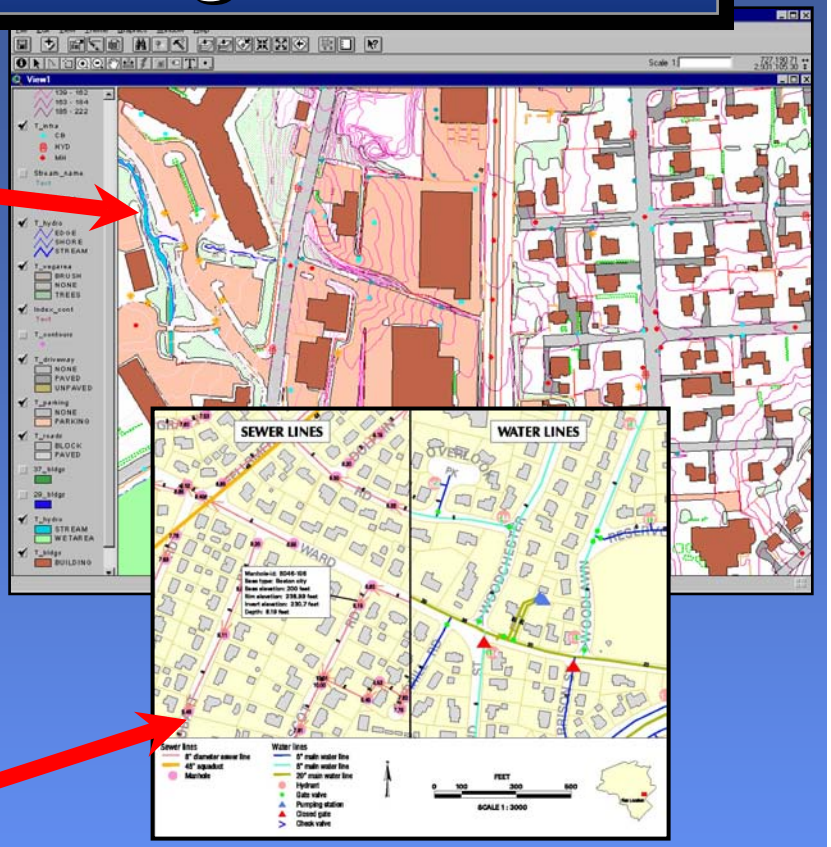
Police Incident Mapping & Charting

Typical Local Govt. Applications

- **Assessor**
  - Assessor's map maintenance
  - Support of revaluation (thematic mapping)
  - Abutters notifications
  - Providing public access to data/maps
- **DPW/Engineering/Water & Sewer**
  - Water, sewer, drain system mapping
  - Infrastructure improvement planning
  - Support of special studies (e.g. Master Plans)
  - Support of construction activity
  - Logistics: *e.g.* snow plow routing, street sweeping
  - Document archive
- **Inspections**
  - Permit location mapping
  - Confirm permit applications with spatial criteria (e.g. zoning, historic district, wetlands)
- **Planning/Zoning**
  - Support at public meetings
  - Zoning (mapping, appeals, bylaws)
  - Grant applications (ISTEA, CDBG)
  - Special projects (e.g. facility siting, economic development)
  - Development/sub-division approvals
- **Public Safety/Police/Fire**
  - Support of dispatching
  - Development of "street books"
  - Sensitive receptors/hazards mapping
- **Schools**
  - Support of redistricting
  - Transportation (bus stops/routs)
- **Health**
- Etc. etc. etc. etc. etc. etc.

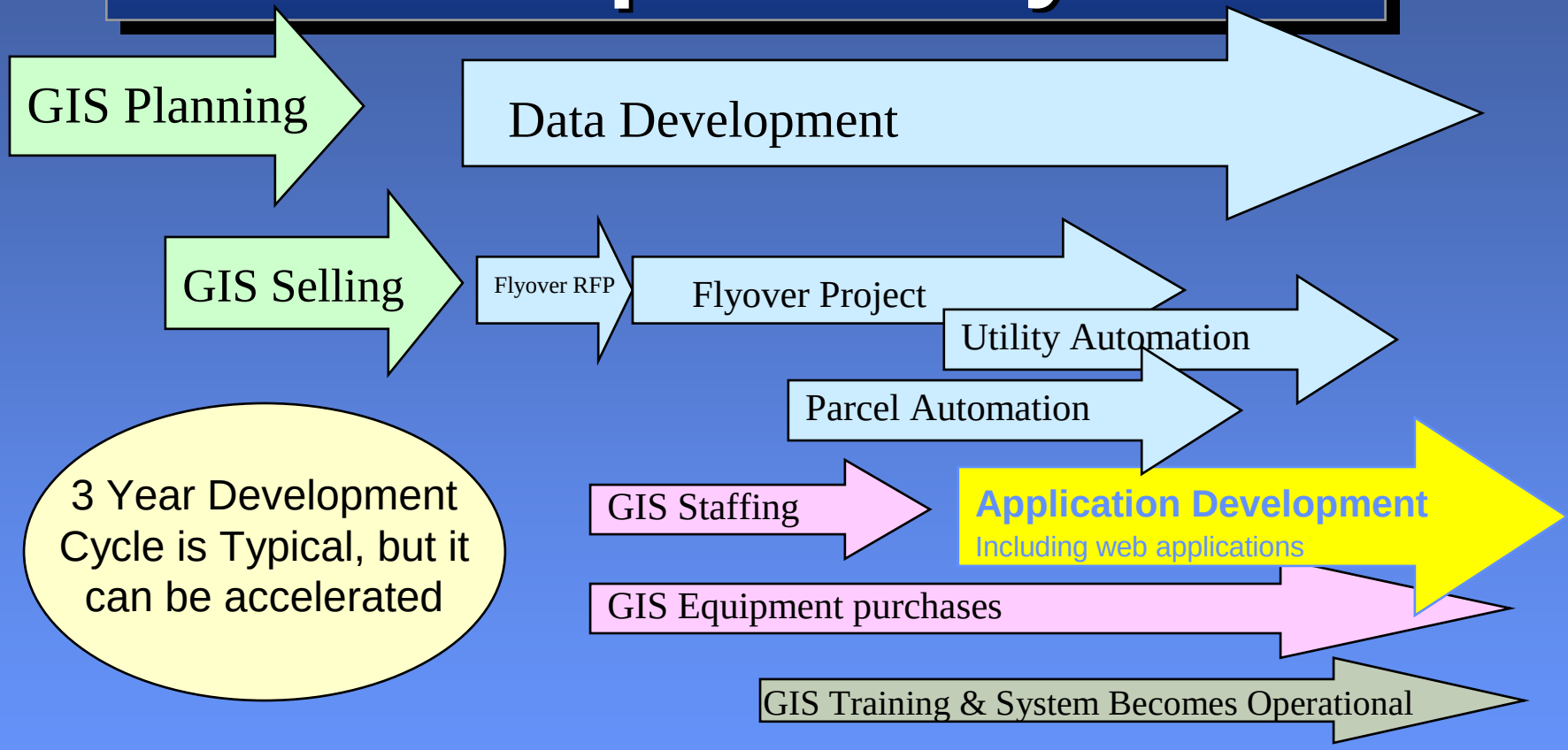
What data are in a local govt. GIS?

- **Base map**
  - ***The Visible Geography***
  - Either 40’ or 100’ scale
  - Building footprints
  - Edge of pavement
  - Sidewalk
  - Street “furniture”: hydrants, manholes, etc.
  - Utility poles, streetlights, signs
  - Driveways and parking
  - Fences and swimming pools
  - Topography (2 ft. contour lines)
  - Aerial photographic backdrop (orthos)
- **Thematic Data**
  - ***The Invisible Geography***
  - Parcels
  - Water, sewer, drain systems
  - Zoning
  - Districts & precincts
  - Special districts (schools, historic, police, etc.)



- **Statewide Layers (AGRC)**
  - Govt. & protected lands
  - Environmental & Natural Res.
  - Political boundaries
  - Orthoimages
- **Federal Layers**
  - Floodplains, Soils, Census

Typical Local Govt. GIS Development Cycle



The Benefits of Local Govt. GIS

Attempt to document these during the planning process

- **Quantitative Benefits**
  - Increased efficiency
  - Avoided costs
  - Enhanced revenues
- **Qualitative Benefits (value added benefits)**
  - Better mapping
  - New capabilities (analysis, modeling)
  - Avoid accidents (e.g. water main breaks)
  - Attract economic development

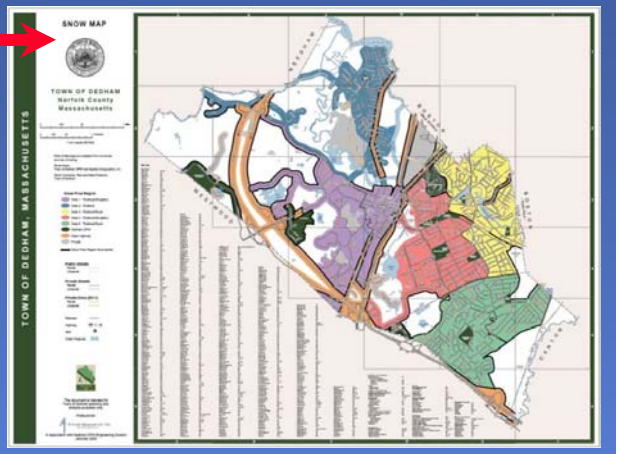
Good information leads to better planning and decision making, and ultimately better quality of life

What does an "advanced" local Government GIS look like?

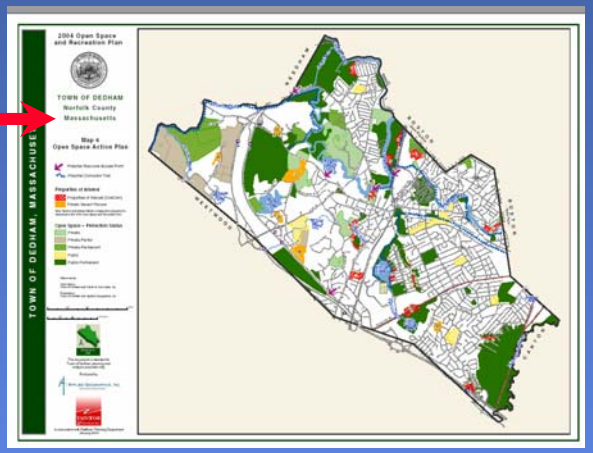
Dedham, MA
Population: ~30,000

Always More New Digital Data Layers

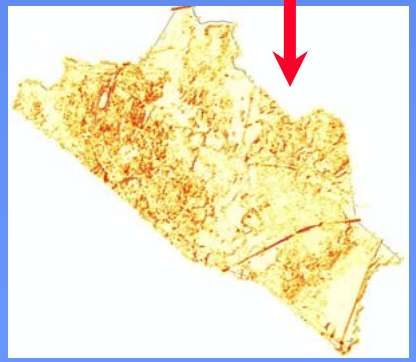
- Snow Plow and Sanding Areas



- Open Space Layers

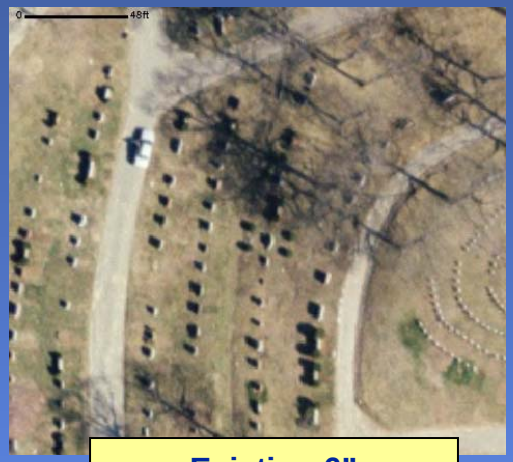


- Town Facilities Layer
- Digital Elevation Model
  - Hillshading
  - Steep slopes

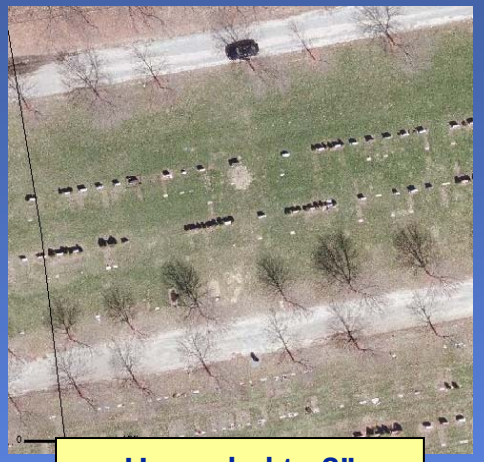


Maintaining the data…
Recurring flyover Update Program

- Updated aerial photo images (orthophotos)
  - Higher resolution, 3” pixels existing images 6” pixels



Existing 6” resolution



Upgraded to 3” resolution

- Updates to core planimetric layers
  - New development and pavement:
    - Buildings
    - Streets
    - Parking
    - Sidewalks
    - Pathways
    - Etc.

Identification of new construction

What Comes Next for Data?

Adding Oblique Imagery

- Complementary to orthoimagery
- Valuable for public safety and property valuation

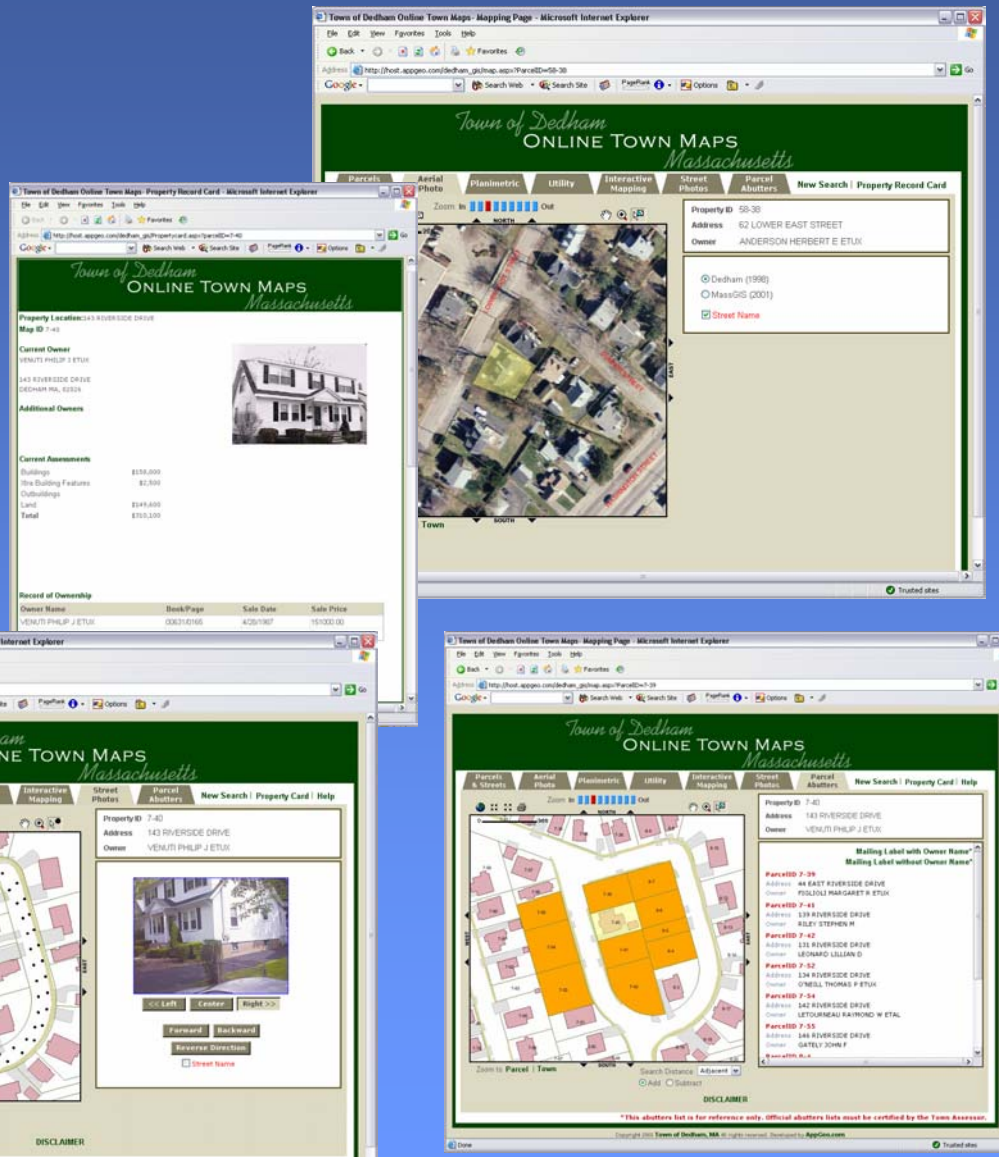






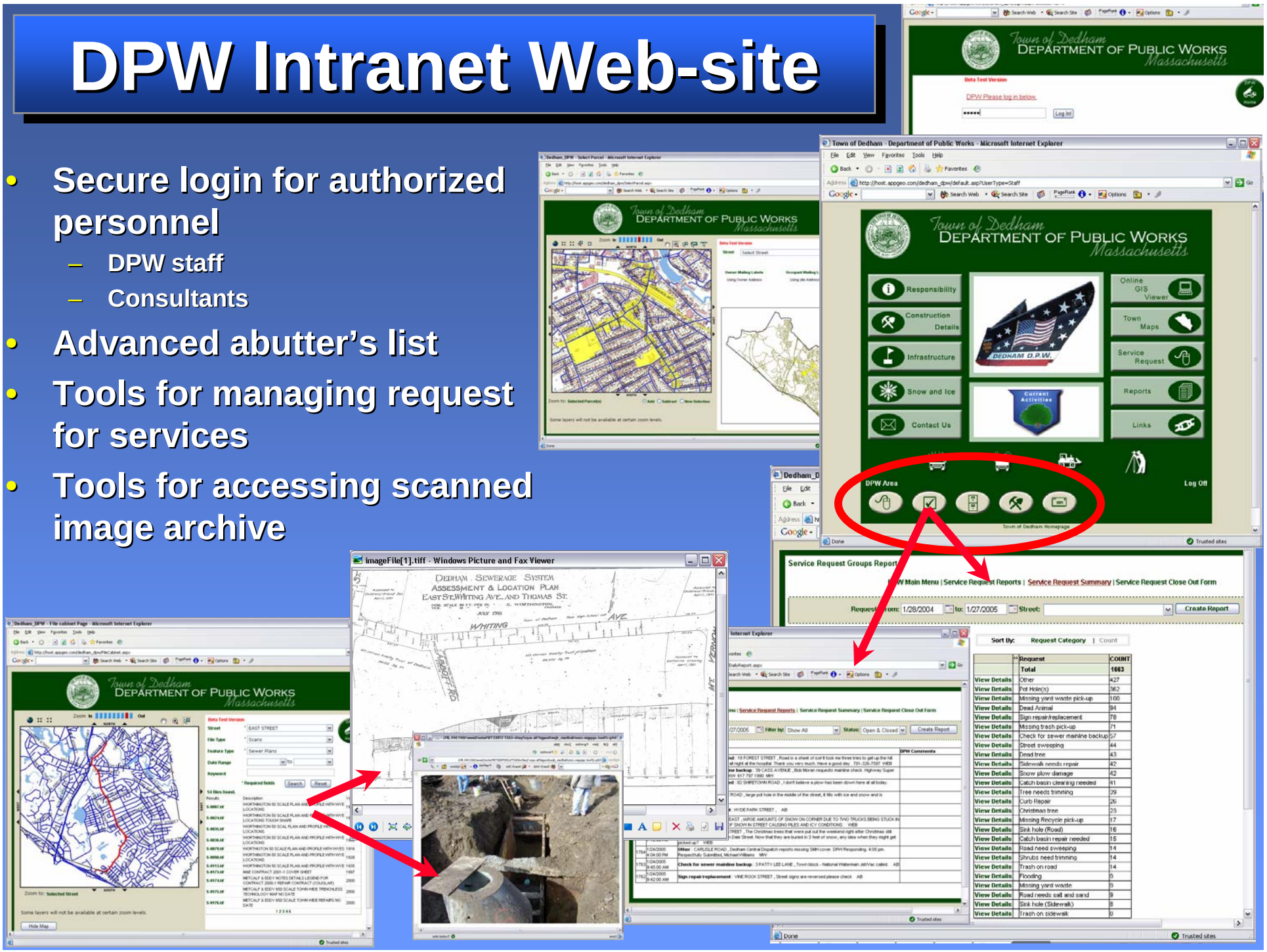
Robust Publicly Available Web-site

- **GIS Site went live to the public in April 2004**
  - Has been a huge success
  - Content and functionality have been added incrementally
  - Virtually no desktop GIS use in town
- **Site is heavily utilized**
  - ~700 sessions/month
  - ~8,000 maps/month



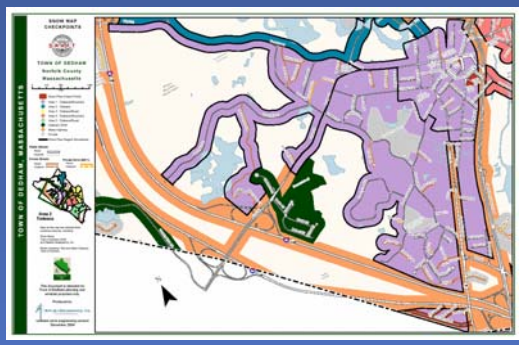
DPW Intranet Web-site

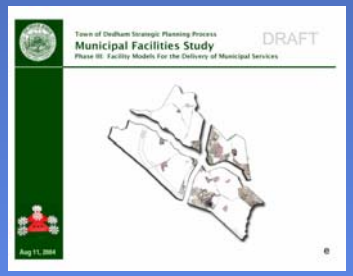
- Secure login for authorized personnel
  - DPW staff
  - Consultants
- Advanced abutter's list
- Tools for managing request for services
- Tools for accessing scanned image archive

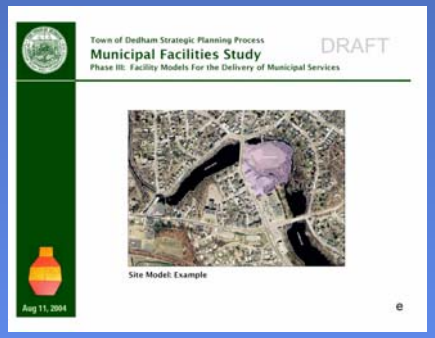


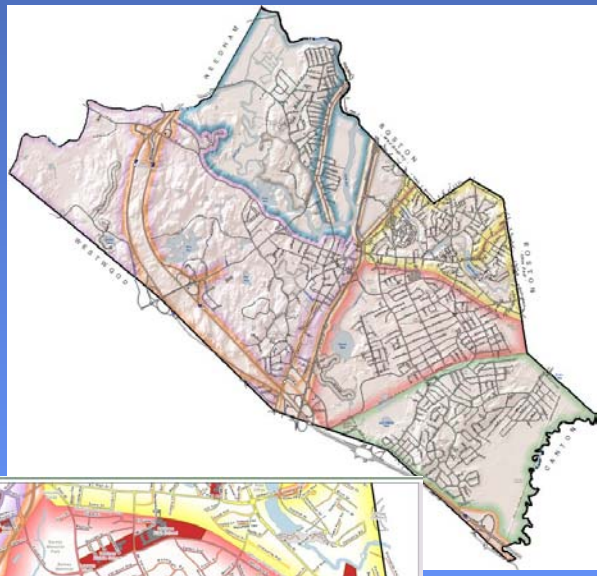
GIS Support for Special Projects

- Making the GIS pay
- GIS products can be brought into ongoing activity
- Improves product, lowers costs/cost avoidance
  - GIS supports other contract work for town
- Three notable examples:
  - **Facilities Alternative Study**

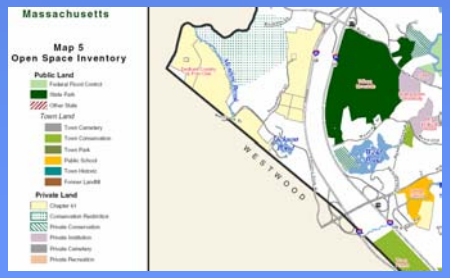








  - **Open Space Plan**



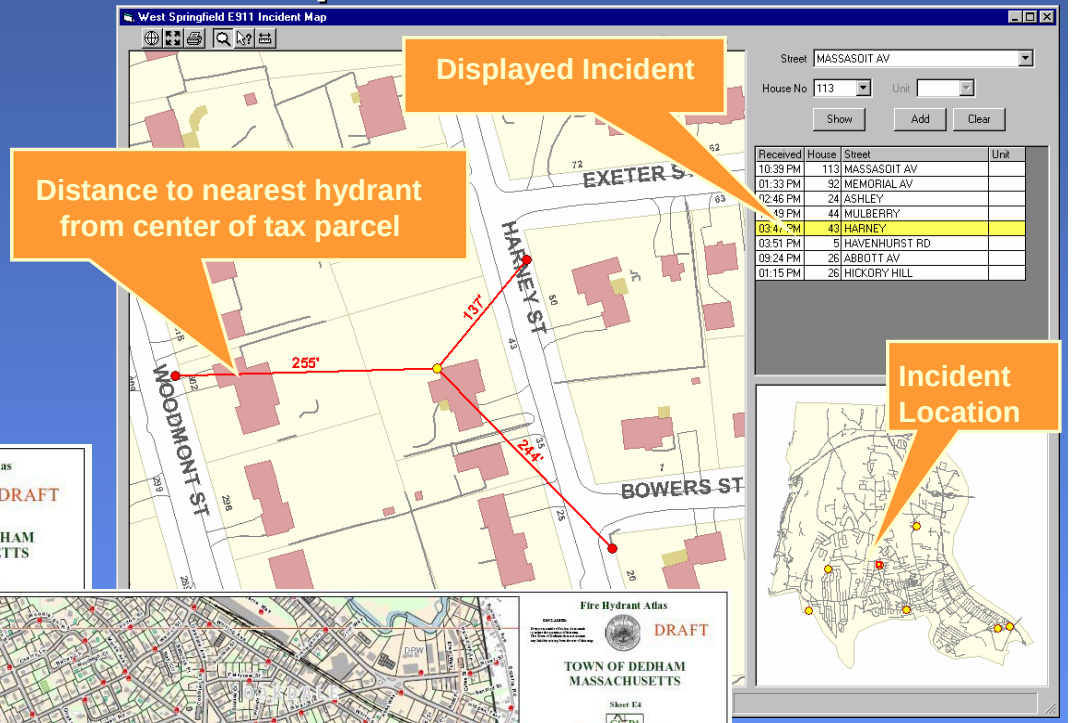
  - **Snow fight planning/operations**

What Comes Next?

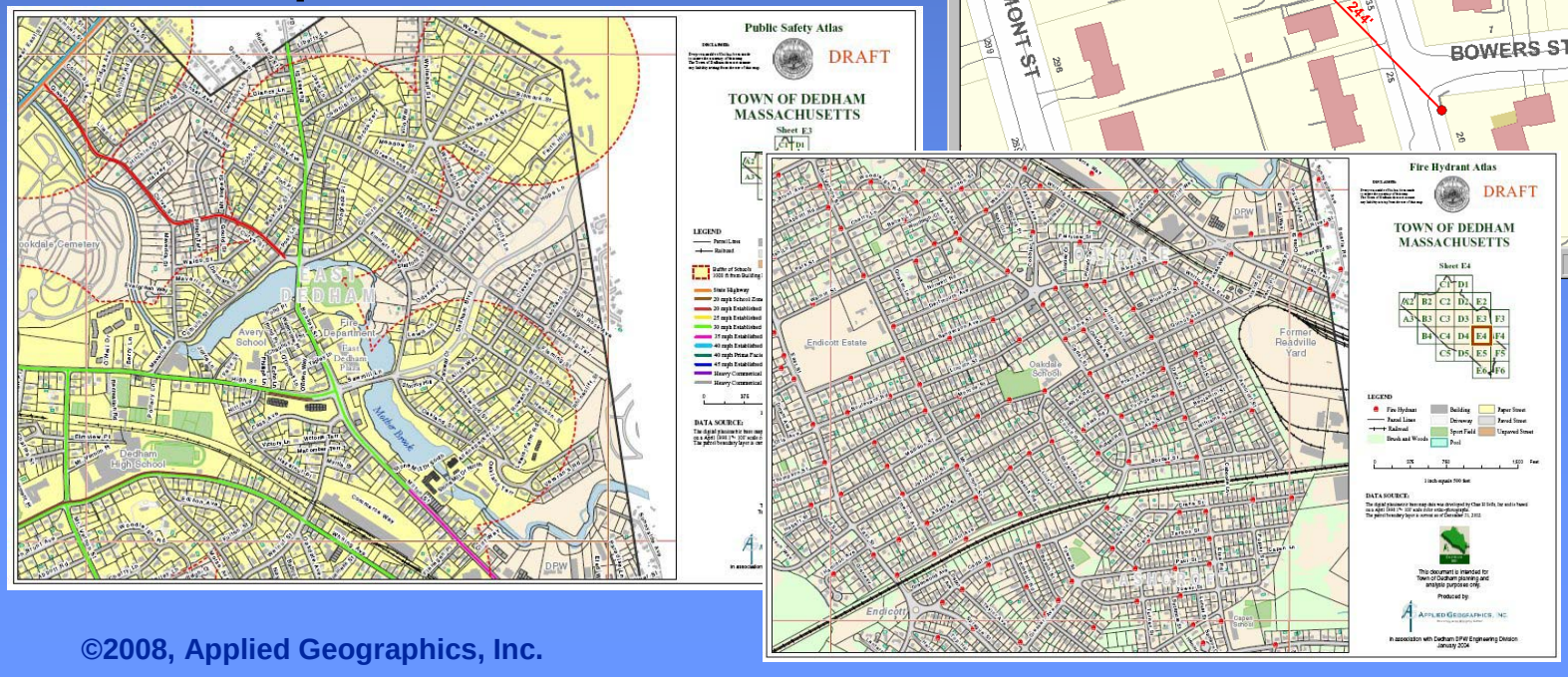
GIS Applications for More Departments

- **Ruggedized Tablet PC for fieldwork**

- **Dispatch Tool**

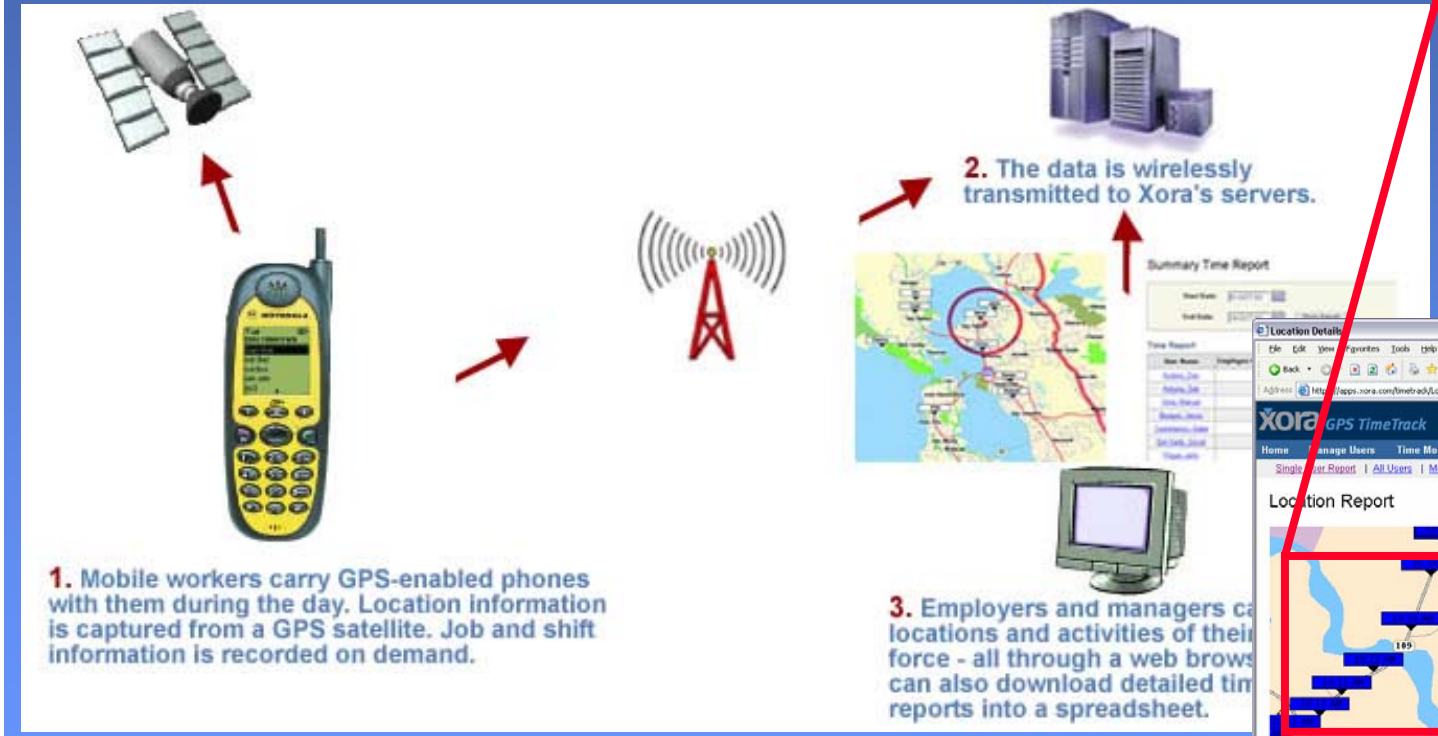


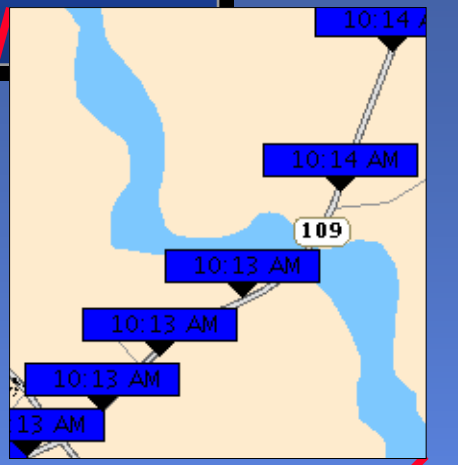
- **Atlas Maps for Police and Fire**

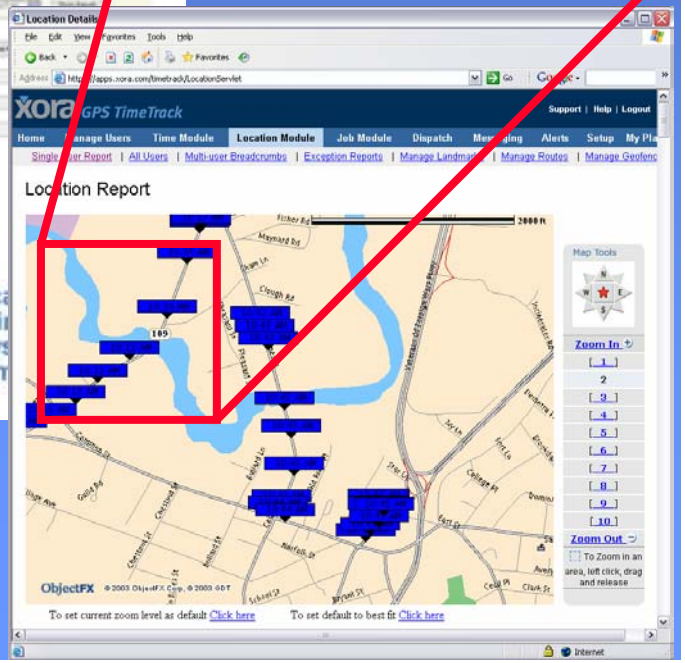


What Comes Next?

Automated Vehicle Location (AVL)
GPS Tracking of Snow Plows







Do these things come into being without planning?

- Sure, sometimes…
- But, GIS Planning facilitates the development of complex systems
- Understand what's out there
- Know what it takes to build it
  - Technology
  - Money
  - Expertise
  - Maintenance tail
- Describe the benefits
  - Necessary precursor to funding

Thank You

Questions???

Michael Terner
mgt@appgeo.com